Docket No.: BBNT-P01-253
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Basu et al.

Application No.: 10/652,255 | Confirmation No.: 1970

Filed: August 29, 2003 | Art Unit: 2442

For: SYSTEMS AND METHODS FOR AUTOMATICALLY PLACING NODES IN AN AD HOC NETWORK | Examiner: J. M. Macilwinen

REPLY BRIEF UNDER 37 C.F.R. § 41.41

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Madam:

This Reply Brief is submitted in response to the Examiner's Answer, dated February 18, 2009.

I. STATUS OF CLAIMS

Claims 1-55 are pending in this application. Claims 1-55 were finally rejected in the Office Action dated April 9, 2008 and are the subject of the present appeal. Claims 1-55 are reproduced in the Claim Appendix of the Appeal Brief filed November 9, 2008.

II. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. Claims 1-7, 9-19, 21-28, 30-37, and 40-42 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. ("Improved Approximation Algorithms for Biconnected Subgraphs via Better Lower Bounding Techniques") in view of Li et al. ("Sending Messages to Mobile Users in Disconnected Ad-hoc Wireless Networks") and Templin (U.S. Patent Application Publication No. 2001/0040895).

B. Claims 8 and 29 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al., Li et al., and Templin in view of Jennings et al. ("Topology Control for Efficient Information Dissemination in Ad-hoc Networks").

C. Claim 20 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al., Li et al., and Templin in view of Liao et al. ("GRID: A Fully Location-Aware Routing Protocol for Mobile Ad Hoc Networks").

D. Claims 38, 39, and 49 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al. in view of Li et al.

E. Claims 43, 44, 46, and 47 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al., Li et al., and Liao et al. in view of Gibson et al. (U.S. Patent No. 6,362,821).

F. Claim 45 has been rejected under 35 U.S.C. § 103(a) as unpatentable over Garg et al., Li et al., Liao et al., and Gibson et al. in view of Proctor, Jr. et al. (U.S. Patent No. 5,960,047).

G. Claim 48 had been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Garg et al. and Li et al. in view of Liao et al.

H. Claims 50-52 and 54 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Hsu ("Simpler and Faster Biconnectivity Augmentation") in view of Li et al.

I. Claims 53 and 55 have been rejected under 35 U.S.C. § 103(a) as unpatentable over Hsu and Li et al. in view of Lin et al. ("Adaptive Clustering for Mobile Wireless Networks").

III. ARGUMENTS

In the "Response to Arguments" section of the Examiner's Answer (pp. 27-43), the Examiner reiterates many of the allegations that are presented in the "Grounds of Rejection" section of the Examiner's Answer and the final Office Action, dated April 9, 2008. Thus, Appellants' arguments presented in the Appeal Brief, filed November 9, 2008, are applicable to those allegations. Appellants submit the following additional remarks.

A. Claims 1-7 and 9-18

In the Appeal Brief, Appellants demonstrated that Garg et al., Li et al., and Templin, whether taken alone or in any reasonable combination, do not disclose or suggest collectively moving nodes in one or more of the leaf blocks to make the network biconnected, as recited in claim 1 (see pp. 8-12 of the Appeal Brief). Appellants further demonstrated that Templin teaches away from the claimed subject matter of claim 1 by disclosing that "node movement should be minimized, as it results in increased transmissions and can temporarily diminish network performance" (see pp. 8-9 of the Appeal Brief). In response, the Examiner alleges that there is no support for this assertion (Examiner's Answer, p. 27). Appellants respectfully disagree with the Examiner's allegation.

In paragraph 0039, Templin discloses that "movement by one node 18 does not necessarily result in breaking a link, but may diminish the quality of the communications with another node 18 over that link." Because Templin specifically discloses that movement by a node may diminish the quality of communications, Templin specifically teaches away from moving nodes.

The Examiner further states that "the Examiner does not agree that utilizing these three

references, with the provided motivation to combine, as well as with additional supportive arguments, amounts to a 'piecemeal explanation'. Furthermore, the Examiner does not agree that any of the provided explanations or interpretations of the prior art were 'illogical'" (Examiner's Answer, p. 29). In response, Appellants submit that the Examiner has combined unrelated portions of three references to allegedly disclose a single feature. One skilled in the art at the time of the invention would have no reason to combine the disclosures of Garg et al., Li et al., and Templin. Furthermore, even if one were to combine the teachings of Garg et al., Li et al., and Templin, the combination would not produce the recited feature of claim 1.

Appellants submit that the Examiner did not provide any reasons for combining the disclosures of Garg et al., Li et al., and Templin, let alone the kind of articulated reasoning with a rational underpinning that is required for establishing a *prima facie* case of obviousness. See, for example, KSR International Co. v. Teleflex Inc., 550 U.S. 398, 127 S. Ct. 1727, 82 U.S.P.Q.2d 1385 (2007) (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Therefore, the Examiner's allegation, that the combination of Garg et al., Li et al., and Templin allegedly discloses the above-noted feature of claim 1, is not supported by the reasoning provided in the rejection of claim 1.

For at least the reasons given above and for those reasons given in the Appeal Brief, Appellants respectfully submit that the rejection of claims 1-7 and 9-18 under 35 U.S.C. § 103(a) based on Garg et al., Li et al., and Templin is improper. Accordingly, Appellants request that the rejection of claims 1-7 and 9-18 be reversed.

B. Claims 21-28 and 30-37

In the Appeal Brief, Appellants demonstrated that Garg et al., Li et al., and Templin,

whether taken alone or in any reasonable combination, do not disclose or suggest a movement controller, within at least one node of a plurality of nodes in a network, that is configured to identify one or more blocks, as one or more identified blocks, to move to make a network biconnected, as recited in claim 21 (see, pp. 14-17 of the Appeal Brief). In response, the Examiner alleges that "Applicant continues by arguing that Li does not 'disclose or suggest a movement controller…'" (Examiner's Answer, p. 32). Appellants submit that the Examiner has mischaracterized the statements in the Appeal Brief.

Appellants stated in the Appeal Brief that:

> Nowhere in this section, or elsewhere, does Li et al. disclose or suggest a movement controller, within at least one node of a plurality of nodes in a network, that is configured to identify one or more blocks, as one or more identified blocks, to move to make a network biconnected, as recited in claim 21.

(Appeal Brief, p. 16). Li et al. is not concerned with whether a network is biconnected. Instead, Li et al. is directed to algorithms for keeping a network connected where the network includes mobile hosts (section 1). Therefore, although Li et al. discloses asking intermediate hosts to change their trajectory in order to complete a routing path, Li et al. has nothing to do with identifying blocks to move in order to make a network biconnected.

For at least the reasons given above and for those reasons given in the Appeal Brief, Appellants respectfully submit that the rejection of claims 21-28 and 30-37 under 35 U.S.C. § 103(a) based on Garg et al., Li et al., and Templin is improper. Accordingly, Appellants request that the rejection of claims 2-28 and 30-37 be reversed.

C. Claim 38

In the Appeal Brief, Appellants demonstrated that Garg et al. and Li et al., whether taken alone or in any reasonable combination, do not disclose or suggest causing one or more of the

nodes in the network to move to systematically remove the cutvertices from the network and form a biconnected network, as recited in claim 38 (see pp. 19-21 of the Appeal Brief). In response, the Examiner alleges that Garg et al. discloses systematically removing cutvertices from a network and forming a biconnected network "in section 3.1, which discusses 'partition of vertices into blocks', then works removing the cut vertices ('check if u, the parent of v in T, threatens to be a cut vertex'). Also, as noted in the previous and is noted in the present Office Action, biconnected graphs are defined by lack of cut vertices, and thus making a graph biconnected inherently results in the removal of cut vertices. Garg, as shown above, thus utilizes the term 'graph carvings' to discuss the removal of cutvertices" (Examiner's Answer, pp. 35 and 36). Appellants respectfully disagree.

Garg et al. discloses "concepts of graph carving and tree carving which enables them to give a better lower bound on the optimal, thereby enabling them to prove that their algorithms achieve better factors than 2" (page 103, column 1, line 39 – column 2, line 4). Garg et al. in no way discloses removing cutvertices from a network, let alone causing one or more nodes of a network to move to systematically remove cutvertices from a network. It is unclear where or whether Garg et al. discloses the removal of cutvertices. Therefore, Garg et al. cannot possibly disclose or suggest causing one or more of the nodes in the network to move to systematically remove the cutvertices from the network and form a biconnected network, as recited in claim 38.

For at least the reasons given above and for those reasons given in the Appeal Brief, Appellants respectfully submit that the rejection of claim 38 under 35 U.S.C. § 103(a) based on Garg et al. and Li et al. is improper. Accordingly, Appellants request that the rejection of claim 38 be reversed.

D. Claims 43 and 44

In the Appeal Brief, Appellants demonstrated that Garg et al., Li et al., Liao et al., and Gibson et al., whether taken alone or in any reasonable combination, do not disclose or suggest determining a geographic center of the non-biconnected network, and determining weighted distances for moving the one or more nodes toward the geographic center, as recited in claim 43 (see pp. 25-27 of the Appeal Brief). In response, the Examiner alleges that Liao et al. was cited to disclose "determining the geographic center of the network" and that section 3.1, page 8 of Liao et al. states "we also suggest that they gateway host of a grid should be the one nearest the physical center of the grid" (Examiner's Answer, p. 37).

This section of Liao et al. discloses that a gateway host should be the one nearest to the center of a grid. This section of Liao et al. doesn't disclose determining the geographic center of a network, as alleged by the Examiner. Rather, this section of Liao et al. merely discloses that a gateway host should be near to the center of a grid.

The Examiner further stated that pages 23 and 24 of Liao et al. disclose "utilizing location information (to improve routing by increasing node density)" (Examiner's Answer, p. 38). Regardless of the validity of the statement, utilizing location information is not the same as determining the geographic center of the network. Furthermore, even if utilizing location information could be construed as corresponding to determining the geographic center of the network (a point that Appellants do not concede), Liao et al. does not disclose or suggest determining a geographic center of the non-biconnected network, and determining weighted distances for moving the one or more nodes toward the geographic center, as recited in claim 43.

The Examiner further states that "Gibson clearly teaches moving nodes a weighted

distance. The cited section of Gibson, col. 5 lines 1-7, states that 'a first relaxation step moves each node a distance determined by taking an average (weighted by distance)...'" (Examiner's Answer, p. 38). Even assuming, for the sake of argument, that this section of Gibson et al. can be construed as disclosing determining a weighted distance (a point that Appellants do not concede), this section of Gibson et al. has nothing to do with moving one or more nodes toward a geographic center. Therefore, Gibson et al. does not disclose or suggest determining a geographic center of the non-biconnected network, and determining weighted distances for moving the one or more nodes toward the geographic center, as recited in claim 43.

For at least the reasons given above and for those reasons given in the Appeal Brief, Appellants respectfully submit that the rejection of claims 21-28 and 30-37 under 35 U.S.C. § 103(a) based on Garg et al., Li et al., Liao et al., and Gibson et al. is improper. Accordingly, Appellants request that the rejection of claims 43 and 44 be reversed.

The Examiner's allegations with respect to the claims not addressed herein are reiterations of the arguments set forth in the final Office Action and have been addressed in the Appeal brief at pages 7-38.

IV. CONCLUSION

In view of the foregoing arguments and those arguments presented in the Appeal Brief, Appellants respectfully solicit the Honorable Board to reverse the Examiner's rejections of claims 1-55.

Applicants believe that no fee is due in connection this filing. If however a fee is due, please charge any shortage in fees due in connection with the filing of this paper to Deposit Account No. 18-1945, under Order No. BBNT-P01-253, and please credit any excess fees to such deposit account.

Dated: April 20, 2009

Respectfully submitted,

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